

# **COLORADO LYNX DEN SITE HABITAT PROGRESS REPORT 2006**

by

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## **INTRODUCTION**

Lynx (*Lynx canadensis*) den site habitat data collection was initiated in the summer of 2005 and continued in summer 2006. There is an on-going need to monitor, inventory, and evaluate lynx denning habitat and lynx habitat in general throughout the forests of Colorado where lynx are presently living.

## **METHODS**

A standard protocol for collection of data describing habitats used by lynx was used (Colorado Division of Wildlife, Shenk 2001). This standardized protocol has been used since the beginning of the lynx research and reintroduction efforts in 1999. Field surveys to detect lynx dens were conducted from May through June 2006. To avoid disturbance of female lynx and their kittens, natal den sites were revisited from July through September for habitat data collection once the female lynx and kittens had vacated the site. An assessment of a variety of habitat attributes was made in relation to a number of lynx behaviors including denning, hunting, bedding, and travel (Shenk 2005).

In addition, lynx den sites were assigned to standard forest fuel models utilizing the United States Forest Service (USFS) protocol "Aids to Determining Fuel Models for Estimating Fire Behavior" (Anderson 1982). This fuels model report is "intended to aid the user in selecting a fuel model for a specific area through the use of photographic illustrations" (Anderson 1982).

The fuel models relate to the fuel load and its distribution among the fuel particle size classes. At each den site, a selection was made from the 13 fuel models using the photographic illustrations and narrative descriptions provided. Selections for specific fuel models were done by comparing model illustrations to the den site and immediate den site vicinity. The assignments were site specific and may not apply to a stand or area as a whole although the high elevation spruce/fir stands where lynx dens were located were relatively homogeneous. Subsequently, the 13 Fuel Models were assigned to one of four general categories: 1) grasses and grass dominated, 2) chaparral and shrub fields, 3) timber litter, and 4) slash. Habitat assessments for all 2005 and 2006 lynx den sites were completed by wildlife technicians Grant Merrill or Bob Dickman.

## RESULTS

Lynx dens and successful reproduction in Colorado were documented for the fourth consecutive year. Four dens with a total of 11 kittens were found in May and June 2006. There were likely more kittens being born which were not documented due to radio collar battery expiration or malfunctions on collared adult female lynx or kittens born to lynx that were never collared. In 2006, den sites were located in the San Juan, Rio Grande, and San Isabel National Forests. For the year 2006, three den sites were classified as Fuel Model 10 and one site in Fuel Model 8 (Table 2, Figures 1-4). Elevation, slope, aspect, and forest type for dens found in 2005 and 2006 are summarized in Tables 1 and 2, respectively.

Den sites elevations ranged from 10,226 to 11,787 feet. Most (17 of 20) were located within a 1000 foot elevation range from 10,700 to 11,700 feet. Dens were generally located on steep slopes with northerly aspects. The average slope for den sites in 2005-2006 was 28.3 degrees. Fifteen of the 20 dens were on slopes greater than 25 degrees. The aspect for 12 of the 20 dens was between 320 and 40 degrees. Five more dens were located on slopes with a more easterly aspect ranging from 64 to 95 degrees. All dens were found within the Englemann spruce/subalpine fir forest type zone.

Table 1. Lynx den sites found in 2005.

Lynx ID	Elevation (feet)	Slope (degrees)	Aspect	Forest Type	Fuel Model
AK00F02	10951	15	320	Spruce/fir	10
BC03F02	10730	30	208	Spruce/fir	8
BC03F01	10226	35	40	Spruce/fir	8
YK00F15	10787	35	82	Spruce/fir	10
YK00F10	11762	23	346	Spruce/fir	10
QU03F06	10997	30	70	Spruce/fir	10
YK00F11	11490	35	355	Spruce/fir	10
YK00F01	11637	25	340	Spruce/fir	10
BC04F01	11234	20	360	Spruce/fir	10
QU03F04	11765	25	230	Spruce/fir	8
YK00F7	11010	30	20	Spruce/fir	10
QU03F07	11086	25	330	Spruce/fir	10
QU04F03	11102	15	260	Spruce/fir	10
BC04F05	10715	35	95	Spruce/fir	8
BC00F18	10472	25	320	Spruce/fir	10
BC03F09	10597	40	25	Spruce/fir	10

Table 2. Lynx den sites found in 2006.

Lynx ID	Elevation (feet)	Slope (degrees)	Aspect	Forest Type	Fuel Model
YK00F15	11,480	45	64	Spruce/Fir	10
AK00F05	10,992	26	76	Spruce/Fir	10
BC03F10	11,032	20	330	Spruce/Fir	10
C004F07	11,513	32	340	Spruce/Fir	8

## DISCUSSION

Lynx den sites in Colorado were associated with high elevation Engelmann spruce/subalpine fir stands. Fuel loading within these stands is generally high. Virtually all den sites were determined to be in the timber litter category which is composed of Fuel Models 8-10 with most ( $n = 15$ ) den sites assigned to Fuel Model 10. This model is characterized by “dead down fuels including greater quantities of 3 inch or larger limb wood resulting from over maturity or natural events that create a large load of dead material on the forest floor” (Anderson 1982). A few ( $n = 5$ ) den sites were located at higher elevations near tree line or near rock and boulder fields. These den sites were located in dense clumps of trees but surrounded by more open or rocky areas in which fuels were sparse to non-existent. These den sites were assigned to Fuel Model 8 which is described as, “having a layer of mainly needles, leaves, and occasionally twigs because little understory is present in the stand” (Anderson 1982).

Finally, preliminary work was conducted to monitor movements of the adult female lynx to and from the natal den sites while the kittens were still young ( $< 3$  months old). Generally, there was a core use area surrounding den sites which was presumed to be used for the raising of the kittens before kittens began movements on their own. The amount of information collected is still relatively small, and without statistical validity, but generally the movements of the female lynx from natal den sites has been found to be within a 1 to 2 kilometer radius from the den site. As kittens mature, female lynx will begin to move kittens and it is surmised that at this time temporary den sites are used while the mother lynx makes foraging trips. By August, mother lynx have been observed making larger movements within their annual territories and kittens have been observed to demonstrate an ability to climb trees. Also, during July and August adult lynx have been commonly observed to focus on foraging in the dense willow riparian thickets found within their territories. Presumably, the dense cover and presence of water provide haven for a number of lynx prey species, including snowshoe hare, during the high ambient temperatures of July and August. We suggest that for a lynx den site to prove successful in sustaining kittens to a juvenile dispersal age, several habitat features are likely important, but incompletely understood at this time.

## LITERATURE CITED

Anderson, H. E. 1982. Aids to determining fuel models for estimating fire behavior, USDA Forest Service General Technical Report INT-122, Forest and Range Experimental Station, Ogden, Utah.

Shenk, T. M.. 2001. Post-release monitoring of lynx reintroduced to Colorado. Wildlife Research Report. Colorado Division of Wildlife. Fort Collins, Colorado.

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Figure 1. Den site for lynx YK00F15 in 2006, Fuel Model 10.





Figure 2. Den site for lynx AK00F05 in 2006, Fuel Model 10.





Figure 3. Den site for BC03F10 in 2006, Fuel Model 10.





Figure 4. Den site for lynx C004F07 in 2006, Fuel Model 8.